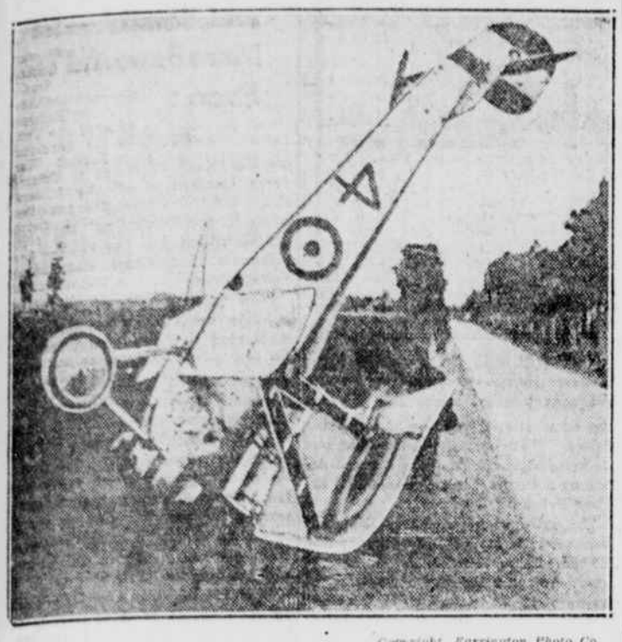
Duelling 20,000 Feet Above the Battlefield

AN AWKWARD LANDING



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A French avion that struck while making a nose dive, or vrille. The machine is held erect by its propellers. The pilot escaped.

Allies Hold Supremacy of the Air by Will Power and Daring Shown In Hundreds of Daily Encounters With Boche Avions

By Bennett A. Molter, F. A. F. C.

THE Allied flying men hold the supremacy of the air on the Western front to-day by sheer will power. It is the combined power of a thousand individual wills, of their daring, their skill and their devotion. But most of all it is their determination and confidence that keep the Boche back of his own lines in the daylight hours, when he can see the vital things. They are also the ones who permit the Allied generals to know, through their flying eyes, from hour to hour, of all that goes on behind the German front.

Armament to-day is equal. The Boche 'planes have as good and trustworthy machine guns as we—and no better. They carry the same number of rounds of ammunition. Their 'planes are as fast. No new wrinkle, no new trick, no new device can be kept a secret by either side for more than a few days after it appears at the front. This is due not only to the number of our 'planes brought down back of their lines, but to the German spy system—spies check up our 'planes as well as troop movements. So, in equipment, we are equal. It is probable that for the last few months we have had more 'planes than they, but they are always able to concentrate equal or greater numbers against us when they make the effort.

Air supremacy is not to be determined by counting noses or weighing guns. It is the sum of a great number of details—and each detail is a combat between an Allied and a Hun airman, hundreds in each twenty-four hours. We control the air because we win most of these combats—because the Boche fears us, fears to come over our lines, fears to take the risks without which he cannot make his work of great value to his General Staff. He has not given up the fight—far from it—but he fights desperately to defend his own ground and to invade ours, yet day by day we beat him back, and day by day we go where it is most needful.

Victory in the combats on which all this depends comes down, since machinery is equal, to a question of the flying and fighting ability of the pilots. Given equal courage—and the Boche aviators have that, whatever may be said of the men on the ground when they are thrown on their individual initiative—given equal courage, it is the flying that counts most. For each combat is a contest in air manœuvres in which the winner lives.

To approach to within a short distance of the enemy and to fire with certitude is a delicate thing, and one that requires much experience. There must be no swerving away from the enemy—you must often nearly run him down—and it frequently happens that when a collision at 20,000 feet seems inevitable it is the one whose nerve lasts a few seconds longest that is able to report back at his hangar. It is the spirit that carries the Allied fliers over those last few inches, the dash that disconcerts and overawes the enemy, that give them the supremacy of the air.

Nor does this mean contempt of the enemy—that is fatal, and often has been. Fritz in the air is always dangerous, and one comes to regard him with a very real respect—not for his cause, but for his ability. There are too many Allied 'planes that do not come home, too many pilots marked "missing," for any man who has been long at the front to have any idea that he can give Fritz anything less than the best he has. Only he knows that when he does hang on for the last inch he will win.

Boy of 17 Made Phenomenal Fight

One of the most thrilling and spectacular air duels ever witnessed started because one of our greatest aces, Navarre, had underestimated the Boche opposed to him. It was in the region of Dixmude, and Navarre swooped at him a little too carelessly. The Boche gave him the hardest battle of his career. Up and down, in loop after loop, in spiral, dive and twist they flew, slipping, turning and dodging, each looking for the fatal second when he could press the trigger on which his finger rested. Time and again there came a burst of fire, but always it was too late, and the man at whom it was directed had just twisted out of line. Finally the Boche tried to drop out of the contest by planing for his own lines, but Navarre followed him, cut off his retreat and forced him to land behind our lines. Navarre landed beside him out of respect for his adversary and found his opponent was a boy of seventeen. The German had quit the duel only because his gasolene reservoir had been punctured and his ammunition was exhausted. The battle was one of the longest on record, lasting nearly five minutes.

It is on the *chasse escadrilles* (hunting squadrons) that the supremacy of the air rests, and with it the security of all that is going on, in and behind the Allied lines. They are the scouts and fighters; their chief mission is to keep enemy 'planes from invading our territory, and this they do by unceasing patrols of the lines, giving battle to any Boche who presumes to venture from his own domain. The patrol is no hit-and-miss operation; it is as scientific, as steady and as careful as the picket duty in the front trenches, or the British destroyer procession across the Channel. It is they who have kept the Boche from repeating his cowardly raids on Paris, where he at one time set out to duplicate the murders of women and children in London.

They also protect the 'planes engaged in regulating our artillery fire, and they have other and interesting duties which I will discuss in another article Their main activity is to fight—they are the duellists of the air, and it is this work that I will describe now.

The details of training have already been told, and I will not repeat them. It is sufficient to recall that for this work only the very best pilots are assigned, as the delicacy of the duties call for many and rare qualifications. The pilot must, of course, be imbued with the highest ideals of duty and self-sacrifice. He must have undaunted courage and perfect confidence; he must be cool under any conditions that may arise. To attack successfully he must always do so with the conviction that he will be the victor.

To help in recognizing enemy 'planes each *escadrille* is supplied with silhouette photographs of all known types of Boche fliers, in all possible positions. These, with study, the pilot soon becomes able to recognize at great distances. He has to depend far more on the types of machines than on the markings which are supposed to show the nationality of the 'plane, as the Boche are using a great many machines which are carrying the cocarde of the Allies. Usually these have a very small black cross painted in the centre of the cocarde, but this cannot be seen until very close, though under powerful telescopes it is plain enough to keep the Boche gunners from firing on their own machines. A pilot who approaches unwarily, in the belief that the machine was one of a friend, might pay dearly for his fault.

Types of 'Planes Are Bewildering

In the Flanders district the recognition of 'planes is particularly difficult, because of the great number of types in use there. Besides the usual familiar types of Boche machines, and the French ones, there are 'planes of the British Royal Naval Air Service, the British Royal Flying Corps (different organizations with different types of machines) the Belgian Aviation Corps, and the Portuguese army 'planes. Their types and sizes vary so much it is easy to make a mistake, and this happens quite frequently. Once a member of a famous French *escadrille* fought a duel at 15,000 feet with a member of the Royal Flying Corps. They did not discover their mistake till the battle had become a draw, and they had parted without injury to either. Later both were reprimanded by their officers, and there were mutual apologies. The use of the Allied cocarde by the Huns increases the danger of such mistakes, as well as making it harder for an Allied pilot to know when there is a foe before him.

When an enemy 'plane has been sighted, manœuvring for the attack begins at once. One must take advantage of every bit of natural cover, in an effort to catch the Hun unawares. If the day is clear, for instance, the pilot should try to get between his enemy and the sun, which will blind the Boche and the attacker can get within a few feet before discovered. It is almost impossible to see a machine that is falling from above with the sun behind it. The use of clouds for both attack and escape is of course very frequent. This can be done best when the clouds are large, fleecy white ones, scattered about the sky. One may fly above them, catching occasional glimpses of the earth to avoid being lost, and one has a gallery seat for the whole show, of all the 'planes in the air beneath him, without being himself exposed.

As a protection against attacks from above most 'planes of both sides now are camouflaged on the upper side of the wings. The difficulty of a successful disguise of a 'plane that will work under all conditions is great, since the background changes so frequently. Still, the camouflage may be designed for the kind of background that is most frequent, and it helps just that much. Attempts are also made to disguise the under sides of the wings—of course with a very different color scheme, pale blue, pea greens, aluminum, like the silver sky—both to make a poorer target for anti-aircraft guns and to enable one to drop down on an enemy from above without being spotted.

The Best Way To Attack Foe

The modes of attack, as has been stated, differ according to the type of enemy machines. If by good luck you catch a Boche isolated and the 'plane is a single seater, the favorite mode of attack is to dive down from behind, and [illegible] behind him—"getting under his tail," we call it. Here you can pump lead into him at will, as he carries but one gun—mounted forward. He must turn his 'plane to fire back at you. Another mode of attack, used when you meet instead of overtaking the enemy, is to dive head on, then to a reversement, bringing you up and behind the enemy, protected by his stabilizers, where you again have the advantage. The best position for this form of attack is known as [illegible] *avant*" (from three-quarters in advance). Diving from that position, the Hun pilot cannot fire at you without shooting through h[illegible] is a biplane—in fact, these may hide you from him entirely—and the reversement places you exactly under his tail.

The combat, of course, does not often work out in this simple way. The enemy pilot dodges to prevent your getting under his tail, and the duel then becomes a series of acrobatic manœuvres, each man trying to get on the position of advantage. [illegible] to get on the nerves of his adversary by keeping him under fire as constantly as possible, and at the same time protects himself by virages, slips and loops, to keep out of the other's line of fire. The combat does not last long—a few seconds usually—when one man loses his nerve and becomes demoralized and tries to escape.

If one is surprised in the air by an enemy he should never dive, always climb. If the attacker follows, you should spiral upward, keeping him always inside the circle, in sight, and watching for an opportunity to dive at and under him. If, however, the pilot sees the enemy diving at him, it is thought good piloting to keep as nearly directly below him as possible and go through the same manœuvres that he does, only at a lower altitude. If he dives, you dive; if he virages, you follow; if he climbs, you go up after him. While you do this he cannot bring a gun to bear on you, and there is always a chance that he will make a slip and let you get under his tail. If this does not happen he will soon give up and leave you.

The two seater (*biplace*) machine is a more dangerous adversary, in that it is better protected by gunfire, though it has not the agility of the smaller machines. The biplane is strongly guarded at the rear, having a machine gun mounted there on a swivel, to be fired by the observer, as well as the usual fixed gun in front, fired by the pilot. This greatly reduces the "dead areas of fire" and makes it possible to come at the machine only from directly above or behind and below. The new Gothas have further decreased this "dead fire area" by mounting a third gun on the floor of the *nacelle*, which is fired through a tunnel in the fuselage, so that the position "under the tail" becomes deadly danger, instead of an advantage.

Good Piloting Is Almost Subconscious

To drive an aeroplane is nothing at all—all kinds of men and some women make good aviators—but to pilot it as one must in an aerial combat, is extremely difficult. A pilot must be able to do with his machine all that he wishes. He must make it respond to his very emotions; it must be a part of him, as the horse becomes part of an experienced rider In fact, to enter the Royal Flying Corps of Great Britain a knowledge of horsemanship is required, and the sympathy of action between horse and man must be duplicated between *avion* and pilot. He must be able to do the most complicated acrobatic feats automatically while his mind is on other matters. He must never be occupied for a second with the handling of his machine. That must always be a secondary consideration—a reflex, subconscious. This is a thing that is only acquired by months of methodical and constant training, and to it too much importance cannot be attached.

This is in addition to his knowledge of methods of fighting. This, too, must be perfect, and is a thing that changes almost from day to day. As our own pilots or the enemy's develop new tricks and modes of attack or escape, principles that are right to-day may be wrong to-morrow. It is possible the Boche has learned an answer to them. Also the pilot must consider all the different types of machines with which he may come into conflict. There are many of these—every once in a while the enemy will produce a new one, as recently, with the Gothas—and each machine must be met and attacked in a different manner. There are differing types used along different sectors of the front, and a pilot transferred to a new territory will have trouble for days before he gets acquainted.

Thus the science of air combat is always an almost exact thing. Few movements have not been tried; few have been found for which no answer is possible. Each manœuvre, to the skilled pilot, calls for a definite response; each position in relation to his enemy indicates what his next move—and the Boche's—should be. In fact, the science has become in many ways like that of fencing, where the opponents each count on the other doing the expected thing, and attempts to win by catching the other off guard, or fighting with a little more dash and power than his enemy.

It is possible that his confidence in this code was the cause of Guynemer's death. He particularly enjoyed outflying and outmanœuvring his enemies, and then, when their nerve was frayed, administering the death stroke. The Hun pilot who brought him down was a novice, as is shown by the fact that he was himself killed within a few days, and by his boasting letter to his mother that "now she need have no fear for him, since he had conquered the greatest of all airmen." But novices do the unexpected, and it is possible that this youngster, instead of replying to one of Guynemer's manœuvres, by "executing a position of advantage," as the French ace expected, became excited and did "the wrong thing" according to the book, but one which caught Guynemer off his guard.

Let us now start with a French patrol on the day's work. These *chasse* patrols always work in groups of six or more, except the aces, who are sometimes allowed to fly in pairs. To fly alone is suicide, and there must be several 'planes to approach any degree of safety. Even Guynemer would never have thought of flying alone during the later months of his life; it was different in the early days. Guynemer's escadrille, N-3, was composed of some of the best pilots of France and teamwork was their special strength.

The fighting 'planes leave their aerodromes at one or two minute intervals, and each pilot as he leaves the ground reaches out and "arms" his machine gun by swinging the lever that projects from the right of his windshield and pushing under the hammer of his Vickers gun the first cartridge in his belt. The guns are never loaded when on the ground, as a jar might set them going, and the first duty of a pilot in going up is to arm his machine just as his last duty before alighting is to disarm it. Each pilot has a single belt of cartridges (200 rounds) coiled in a little box at the right and under his gun. That is his "trip's" supply; if he exhausts it he must return to the hangar, if he can.

After leaving the hangars the 'planes proceed to some agreed rendezvous in the air, above some landmark. There they whip into formation. The chief of the patrol, after the group is formed, slowly balances—that is, see saws his machine as a signal for departure—and off they are on their patrol of the lines. Each pilot in the group must watch and follow every movement of his chief. Recently avions have been equipped with a radio receiving outfit, and are notified while in flight of any concentration of enemy 'planes in nearby sectors. They then start immediately for the scene and give battle.

Sometimes it happens that some man in the second or third position in the group will be the first to see an enemy 'plane. In that case he immediately leaves his position, flies up beside the chief and balances his machine. He then, for the time, becomes the chief of the group. He leads the attack, the others following and supporting him. When the combat is finished he returns to his former position, and the group resumes its patrol under the original chief. If a patrol meets two groups of enemy 'planes at once, it divides automatically, the left wing forming one group, the right another, and each goes to meet one of the Boche groups. When either terminates its combat it rejoins the other, and when the second combat is over the patrol reforms and returns to its beat.

On the return of a group to its aerdrome, the chief of the patrol descends first, the others circling around to take their turns at landing, which they do in the same order as they took their departure, at about two-minute intervals.

Death May Come From Six Directions

In flying over the lines one never holds to a straight course. This is not wholly due to the enemy's anti-aircraft guns, though it is a safeguard against them. It is also to give the pilot a chance to see in all directions so that he may not be surprised by an enemy 'plane. Remember, a pilot has six directions from which an attack may come—north, south, east and west, above and below. He must have a keen eye to be ever watchful in all those directions, lest death swoop upon him unawares. He must make sharp virages, banks and turns. He never looks over the edge of his nacelle, but always turns the 'plane on its side. Above all, he must never be overtaken by an enemy 'plane—he must overtake it. It is always every pilot's duty when in the air to overtake every 'plane that he sees, and make sure of its identity.

The biplanes usually go out with escorts, and in attacking them (they are usually of great value, since they carry observers, often with cameras) the first thing to be done is to separate them from the convoys. It is suicide to attack a group, as the attacker would come under the crossfire of all their combined machine guns and would not have many seconds to live. There is always almost complete safety in groups, and it is because of this that pilots are forbidden to fly singly over the lines. Remember, the government's investment in a pilot exceeds five figures.

The departure at the termination of a combat—when you have decided that the chances are against you or give up hope of being able to outmanœuvre your enemy—is most delicate. Often it is at this moment that the observer of a biplane will start his deadly fire against you. It is now that the acrobatics are most essential, as by falling into nose spins, wing slides and the "falling leaf" drop you not only get away quickly but disconcert your enemy's aim.

The nose spin, or vrille, has long been considered the best method of breaking off, and it is almost absolutely safe with an ordinary opponent. But should the Hun be an expert he will take advantage of the "dead points" in the spins—the moments when the plane's wing area is opposite him at the start and finish of a spin—to open fire. The wing slide is another excellent method of escape—it is used exclusively by Lieutenants Dorme and de la Tour, two of France's greatest pilots.

Laying an Air Trap Is a Wily Business

The laying of traps and ambuscades for the enemy 'planes has become a recognized feature of air warfare. The object, of course, is always to bring a sudden overwhelming force against one or two men, shut off their escape and bring them down without putting your own pilots into any serious danger. The plan most used was first tried out by *Escadrille* N-3—that famous organization of which Guynemer was the star. A patrol from it would go out, flying very high up, leaving an experienced man for a decoy 5,000 or 6,000 feet beneath them. They would keep out of sight as well as possible, while the decoy would loaf along letting himself be "surprised" by a Hun. He would let him come within 200 or 300 feet of him, open fire, and then, before he got into any serious danger, go into a vrille or wing slip and escape. By the time this happened the other members of his squadron would be on top of the Boche.

The trick works both ways. It was in this manner that James Norman Hall, of the Lafayette Squadron, and the author of "Kitchener's Mob" was so severely wounded recently. His experience is almost incredible. The Lafayette was going on its daily patrol and Hall was delayed several minutes by motor trouble in taking the air. This remedied, he hurried to the rendezvous, but found that his comrades had already given him up and departed. He took the great risk of setting out to find them.

Five or six miles the other side of the Hun lines he saw six or seven 'planes that looked at their 16,000-foot elevation like those of his patrol. He started toward them, and when almost beneath them saw just a plain Boche 'plane. Still believing that the men above were his friends, he attacked the Boche. As he went into a virage to attack he saw that the higher 'planes were all diving for him, and that they were German! Instead of turning tail, Jimmy dove straight at the Boche beneath, opening fire with his machine gun in the hope of getting the Boche before he was brought down himself. Then he got it from every side. One ball passed through his left lung, another furrowed his forehead, a third pierced his thigh. He went into a vrille at full motor—a terrific manœuvre—his only chance. He lost consciousness, and did not regain it until he had fallen to 6,000 feet, a 10,000-foot fall. Then he came to, just for a second, but he remembers distinctly bringing his 'plane back into control, shutting off the motor and heading for the French lines. He knew nothing more till he was on a stretcher, being carried to a dressing station.

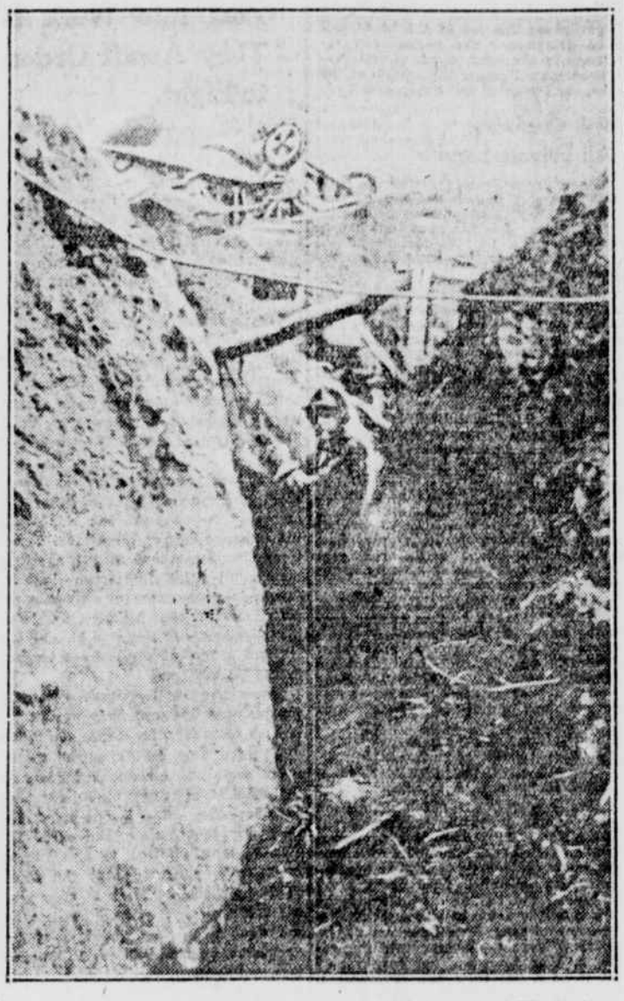
Most Amazing Fall of the War

A French officer who was in command of troops in the front line and witnessed the entire combat completes the story. In a letter he wrote Hall he says that after he came out of his vrille he saw him glide across the German lines into French territory, make a *virage* and redress his plane for the landing. Remember that all this time Hall was unconscious. This surely goes far to prove the theory that an aviator's piloting is sub-conscious.

Nothing more amazing than Hall's landing has happened during the war. His machine came down directly over a French trench, the two wheels on its landing *chassis* set themselves down into the trench, and the plane was held firmly, not across the trench, but with the fuselage pointing straight up, the wings lying out on either side along the trench. The machine settled, the wings bent and collapsed, and Hall, still strapped to his seat, was let down easily into the trench, taking no additional injury from the landing.

It was afterward learned that the group that had attacked Hall was Baron von Richthoven's famous "flying circus," among the most dangerous of the Boche squadrons, but now being broken up.

"NOTHING MORE AMAZING HAS HAPPENED"



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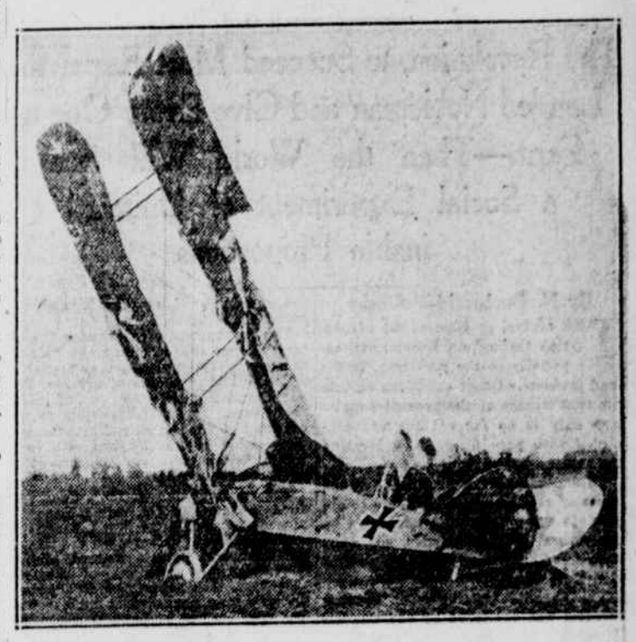
An Allied airplane falls directly into a first line trench, collapsing so slowly that the pilot was not further injured.

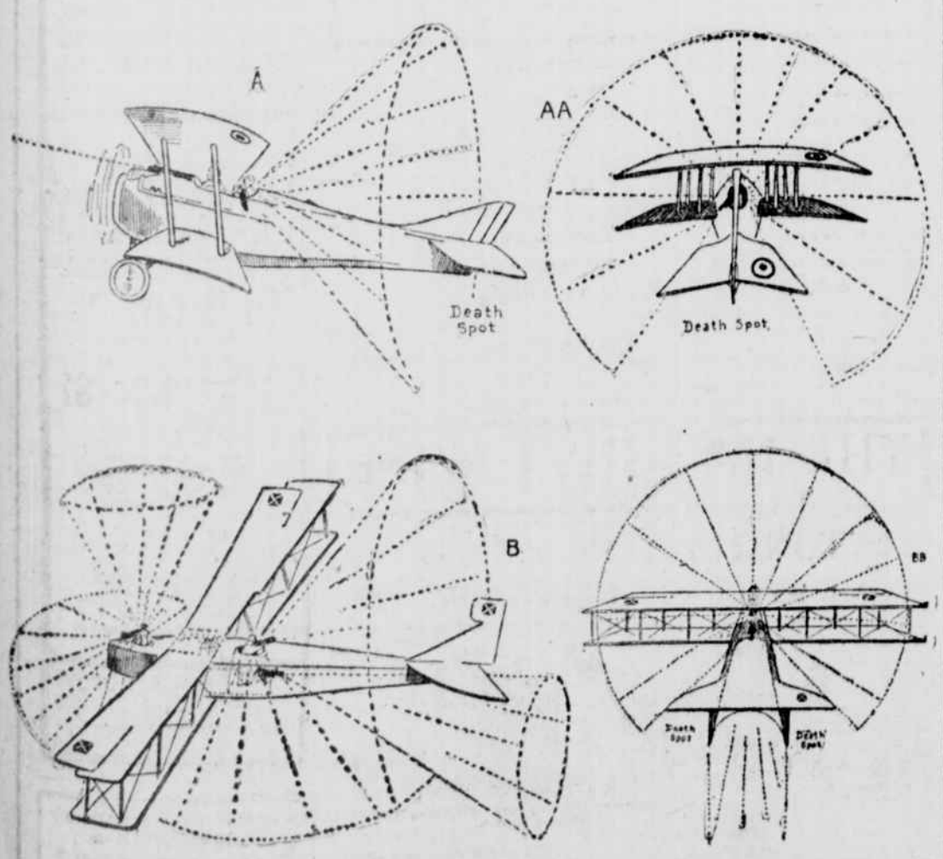
THE FALLEN FOE



A German 'plane shot down in Flanders. It fell in flames.

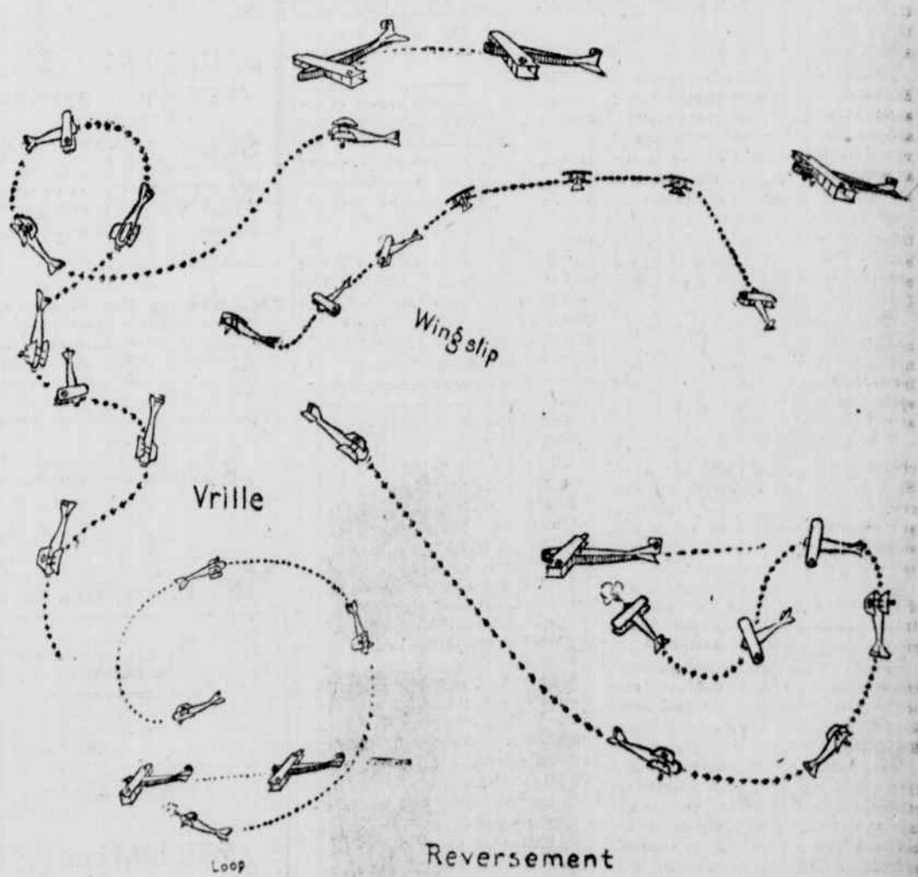
Veteran Pilot Tells How to Attack and How to Defend Ambuscades Set for Fliers, While Fighting Machines Now Work in Groups

FIRE ZONES AND DEATH SPOTS



The whole object of avion manœuvring is to come at the enemy in such a way that you can shoot him, while he cannot shoot you. In the *chasse*, or hunting 'planes, there is a single machine gun, fixed to the nacelle so that it can fire only straight ahead, so that any approach will do that prevents the enemy meeting you head on. Of course, it is not good to come from in front, as a fraction of a second will let him bring his gun to bear. In the two-seater machines, shown in the upper pair of diagrams, a second machine gun is mounted on a swivel, to fire backward, and covers the whole field behind him, except that he cannot fire through his own tail, leaving a "death spot" at that point. In the great Gotha 'planes shown in the lower diagram the Germans have partly remedied this by mounting a third machine gun to fire through a tunnel in the fuselage. This leaves only very small "death spots" to the right or left of the tail, where neither the upper nor lower gun can quite reach. Guns have also been mounted on swivels in front, to give greater protection against attacks from that quarter.

EVERY-DAY STUNTS IN AERIAL DUELLING



Four of the manœuvres that every air fighter must be able to use. The loop is already familiar, and its great virtue is that, properly done, it brings the pilot "under the tail" of his opponent. The *reversement* is a variation to be used when meeting the enemy. In this a loop is started, but the machine is twisted over when the top of the up curve is reached, and slides out right side up—again "under the tail." The *vrille*, a whirling-leaf dive, is a method of escape. Its danger is that in the whirling fall the avion at two points on each turn gives a broadside target to the enemy. The wing-slip is safer, but harder. It offers a poorer target to the foe, but the danger lies in stopping it. To "straighten out" means to reach the wings, and the avion must be twisted into a nose dive before the fall can be checked.